Remarks

The Specification has been amended to correct typographical and grammatical errors. No new subject matter has been added.

Claim 1 is currently amended. Claims 2-42 remain as originally presented. Claims 1-42 are presented for reconsideration.

Claim 1 has been amended to better define the invention, by stating "... simultaneously monitoring said first communication channel and said second communication channel in a common layer of said network so as to accumulate performance data of one of said channels in an active counter; ..." Support for the amendment can be found in Fig. 2 and further in the specification at page 20, lines 3-10.

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bank to be regularly emptied and reset. Miller's object is "efficiently lowering the overhead on meeting the SONET standard for discarding several seconds of generated PM data under certain prescribed circumstances in a manner which does not slow performance, increase RAM and CPU consumption or create design complexity." (column 5, lines 42-47). Miller's system gains efficiency by not retaining large amounts of PM data, and particularly it does not accumulate PM data for the second "controlling" channel into the accumulator. However, this creates a problem in a protection-switched network of certain configurations, where the second channel can be used as an active transmission channel, whereupon immediate switching to accumulate PM data for that channel in combination with the previous sequence of that transmission on the prior channel is important. Applicant's invention elegantly solves this problem with a design that is very different from Miller's disclosure.

It is important to realize that Applicant's invention focuses on maintaining accumulation of PM data following a "switchover", whereas Miller is concerned with accumulating PM data related to other specifically defined "events." "Switchovers" are not equivalent to "events" as defined by Miller. Miller further explicitly defines an "event" as follows:

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> "An event is a defect, failure or anomaly in transmission which causes the occurrence of a severely erred (sic) second or a spontaneous condition." (at column 2, lines 8-10)

Thus, a switchover that is caused by software signaling would come later than an "event", while a switchover that is considered to be an automated corrective action would come prior to and might even prevent the creation of a Miller "event" (in that a second's duration of activities has not occurred to lead to the application card (AC) creating an "event").

This is fundamental to the Miller disclosure. Miller's method accumulates PM signals in a first "controlled" delay module from "events" detected in a first transmission line channel, and then records those signals in an accumulator based on signals received in the "controlling" second transmission line channel. Applicant's invention, on the other hand, is concerned with and responsive to switchovers, which are clearly distinct from Applicant's "primitives" (see Applicant's Published Specification paragraph [0013]) or Miller's "events." Applicant's "primitives" are essentially similar "anomalies or defects" that correspond to

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Miller's definition of "events." Switchovers, however, may result directly from network hardware or software responding to problems in transmission, or indirectly from secondary signals triggered by "events" or "primitives", or from other switching decisions implemented by the software. A switchover need not be caused by a Miller-defined "event" (i.e., by a defect, failure or anomaly), e.g., a switchover could stem from a cyclic, regularly timed, or otherwise controller-induced action. Similarly, "events" could occur that would trigger responses in Miller's PM data accumulation operations without a protection-switchover ever having occurred.

The Examiner asserts that Kakizaki teaches (citing paragraphs [0058, 0065]) that it is known to detect protection switchovers and monitor the performance of the transmission lines after a switchover. As a general statement of the state of the art this is not disputed. However Kakizaki fails entirely to teach or suggest the claimed combination for monitoring multiple channels in a performance switched network.

For example, In Fig. 1, Kakizaki discloses two separate performance monitors 915, 917, fixedly monitoring a working channel and a protection channel, respectively. This static arrangement could not accumulate performance data of one channel

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in an active counter and then accumulate performance data of the other channel in the active counter as is required by claim 1. Similarly, Fig. 2 shows optical detection units 1007, 1008 statically monitoring a working channel and a protection channel, respectively. In Fig. 3, Kakizaki relates the embodiment of Fig. 2 to the performance monitors 915, 917 of Fig. 1. Clearly, there is no provision for simultaneously monitoring a first communication channel and a second communication channel in a common layer of said network so as to accumulate performance data of one of said channels in an active counter, detecting a protection switchover between the channels, and thereafter accumulating performance data of another of said channels in said active counter, as claimed by Applicant in Claim 1.

Fig. 4 of Kakizaki shows a more elaborate arrangement, which includes two optical detection units 210, 220 attached to respective channels. In addition, a receive signal performance monitor 190 (located in a different layer of the network from the optical detection units 210, 220) is switched from monitoring the performance of the second transmission line 130 to monitoring the performance of the first transmission line 120. The performance monitor 190 presumably includes a counter, but this is again a static arrangement, and the performance monitor 190 simply

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continues to monitor a receive signal. In Applicant's Fig. 2, an active counter (counter 56) is connected to a switch 64, and is switchable between a primary channel 38 and a secondary channel 42. Reconfiguration of the active counter is now recited in amended independent claim 1.

Further, Miller teaches away from the inventive concept of accumulating data from different sources in a single counter. Fig. 3 of Miller, cited by the Examiner, shows a bank switched arrangement in the data acquisition library 11, wherein one bank 20 accumulates data associated with a current monitoring interval and another bank 22 contains data associated with a previous monitoring interval. Obtaining a global picture from two sources would require both banks to be analyzed, while the claimed arrangement only requires evaluation of one counter. Independent claims 9, 16, 22, 27, and 35 all recite a third counter that alternately accumulates data from two different channels, a structural feature which is not disclosed in Miller.

In a two-wire, protection-switched network, Miller's data acquisition library cannot accumulate in a third counter PM data from a second transmission line which has just received the transmission signal, because there is no third counter. By Miller's disclosure in Figures 1 and 2, a two wire network would

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have two Application Cards (AC) organized under one unit controller (UC). Miller states that "the data acquisition library 11 is located in the AC or in the UC." One data acquisition library contains a single additive accumulation module (numeral 19 in Miller's Figure 3) Therefore, in a two-wire configuration, Miller's system could have either one additive accumulation module in the UC, or two additive accumulation module in the two ACs connecting the two wires (one module in each AC). Thus, there can be no third counter.

In asserting that Miller discloses a third counter (Office Action, page 4), the Examiner references numeral 29 in Miller's Figure 3. This numeral refers to a stopwatch module 29. Miller's disclosure lays out the role this structure (col. 11, lines 13-31), which simply measures the time that a particular line has been in use, and is not a counter. Nothing in Miller's disclosure suggests that the stopwatch module 29 can be used as an alternative or subsequent storage accumulator to Miller's first additive accumulation module 19. More particularly, nowhere in Miller's disclosure is there any suggestion to accumulate PM data for the said first or second transmission line channel in any of the special-function modules shown in Fig. 3 for an ultimate purpose of collection, storage and analysis. Therefore, Miller

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fails to disclose the claimed third counter. Kakizaki also fails to disclose a third counter as claimed. Indeed, no internal details of the performance monitor 190 (e.g., Kakizaki, Fig. 4) are given.

On page 4 of the Official Action, regarding claims 9, 16 and 22, Examiner relies on Miller's disclosure at column 11 lines 13-33 for asserting that Miller teaches "detecting a switchover between said first communication channel and said second communication channel and thereafter accumulating said second performance data in said third counter". Applicant respectfully argues this is erroneous. At this portion of his disclosure Miller is disclosing a "stopwatch function" that upon detection of an "event" at step 903 sends a signal whereupon the stopwatch module determines, at step 905 whether a change of state has occurred. As argued above, a switchover occurring **prior** to event detection may not be detected as an "event" by Miller's method, because it curtails activities on the first transmission channel, and continuous activities for a time interval of a second are required as a basis for creating an "event" (column 9 lines 17-23). Further, a switchover that is caused by one of Miller's modules causing a response, i.e., stemming from event detection at step 903 in PM data module 29, could only occur **after** the event

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signal that is causative of step 905 occurs. Thus, a switchover can not be included as equivalent to Miller's "change of state." Further, without regard to resolving the distinction between "switchover" and "change of state", all that happens in stopwatch module 29 upon determination of a "change in state" is that the elapsed time is recorded. Nowhere in Miller's disclosure, and clearly not in this section relating to the stopwatch PM data module 29, does his method teach accumulating in a counter PM data from a first channel and thereafter accumulating into that counter PM data from the said second channel.

For the reasons argued above, i.e., that a "switchover" is equivalent neither to Miller's "event" nor to his "change of state", it must be considered that Miller's disclosure is silent as to "switchovers" and, therefore, regarding independent claim 1, Miller does not teach accumulating PM data from a first channel in an active counter, detecting a protection switchover between the channels, and thereafter accumulating PM data from another of the said channels in the active counter. (see Examiner's Action, page 1).

Finally, regarding Miller's use of the language "first and second PM signals in first and second delay modules" (e.g., col. 5; line 65 through col. 6; line 2), Miller uses the terms

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"master" and "slave" instead of "first" and "second". (col. 13; lines 51-63), which indicate a strong coupling between a master delay module and the slave delay module. Applicant's invention continuously accumulates first signals from a first line or second signals from a second line to a counter of similar functional relationship within the claimed performance monitoring system, and with substantial operational symmetry in the treatment of signals from the first and second lines. On the other hand, Miller's design only accumulates a portion of first signals from a "slave" first channel module based upon evaluating signals from the "master" second channel module, with the first channel signals and second channel signals treated differently in processing modules of dissimilar functional relationship within Miller's system and with substantial asymmetry in the treatment of the first and second signal operations. Specifically, in Miller's system two delay queues must be cleared if the master state machine is in the discard state. Such coupling between the channels is not found in Applicant's invention and in fact is contrary to the autonomous operation of the working and protection software counters in the claimed invention. The Examiner asserts that Kakizaki teaches that protection switching is known, and that this provides motivation to modify Miller according to Kakizaki. However,

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because of the inter-channel dependence, the system as disclosed in Miller would be unsuitable for performance monitoring of a protection-switched arrangement as claimed herein. Neither Miller nor Kakizaki provide any indication or suggestion as to how the arrangements disclosed therein could be modified to arrive at the claimed invention. It is only by viewing the invention retrospectively, which the patent laws do not allow, that it becomes apparent that one might attempt to apply Kakizaki to transform the arrangement of Miller into the claimed arrangement, and again the rearrangement is far from trivial.

Applicant urges that the independent claims herein are all allowable for the reasons given above, and the dependent claims are all allowable as depending from an allowable claim.

Summary

It is believed that the amendments and remarks presented hereinabove are fully responsive to all the grounds of rejection and objections raised by the Examiner, and that the Application is now in order for allowance. Claim 1 is currently amended. Claims 1-42 are pending.

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The Examiner is encouraged to telephone the undersigned attorney to discuss any matter that would expedite allowance of the present application.

Respectfully submitted,

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